APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/448,124	11/24/1999	PRADEEP SINDHU	JNP-0013	4690

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EXAMINER
YAO, KWANG BIN

ART UNIT	PAPER NUMBER
2667	

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.		Applicant(s)
Office Action Summary	09/448,124		SINDHU ET AL.
	Examiner		**Art Unit**
	Kwang B. Yao		2667

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2003*.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-6,8-24,27,28,30-33 and 35-44* is/are pending in the application.

    4a) Of the above claim(s) *40 and 41* is/are withdrawn from consideration.

5)☒ Claim(s) *3-5,8-22,24,30-33,35 and 44* is/are allowed.

6)☒ Claim(s) *6,23,27,28,36-39,42 and 43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Petition Under 37 CFR 1.144 to Withdraw Restriction Requirement

1.   Applicant's arguments with respect to claims 1-43 have been considered but are moot in

view of the new restriction requirements.

Election/Restrictions

2.   Restriction to one of the following inventions is required under 35 U.S.C. 121:

    I.   Claims 3-6,8-24,27,28,30-33,35-39,42,43,44 drawn to a flow control method,

        classified in class 370, subclass 229.

    II.   Claim 40, drawn to a method for arbitration by using a probe cell, classified in

        class 370, subclass 462.

    III.   Claim 41, drawn to an apparatus for spraying a data request, classified in class

        370, subclass 395.31.

The inventions are distinct, each from the other because of the following reasons:

3.   `Inventions I, II and III are related as subcombinations disclosed as usable together in a

single combination. The subcombinations are distinct from each other if they are shown to be

separately usable. In the instant case, Inventions I, II, III have separate utility such as the

followings: Invention I has separate utility of performing data packet flow control; Invention II

has separate utility of arbitrating data cells by using a probe cell; Invention III has separate utility

of spraying a data request uniformly across a plurality of output ports. See MPEP § 806.05(d).

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claim 36-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Khacherian et

al. (US 5,768,257).

Khacherian et al. discloses a data switching system comprising the following features: as

depicted in Figs. 2, 3, regarding claim 36, in a switching device having a plurality of line cards

(210, 220) and a switch fabric (200) there between for transferring data packets, a method for

controlling the transfer of data packets through the switching device comprising: using a same

path for data packets as flow control; regarding claim 37, In a switching device having a plurality

of line cards (210, 220) an a switch fabric (200) therebetween for transferring data packets,

where each line card (210, 220) includes an input section including one or more input ports and

an output section including one or more output ports, a method for controlling the transfer of a

data packet through the switching device comprising: generating a request flow control message

at a source line card (310) to request (314) the authorization for a transfer of the data packet from

the source line card (310) to the destination line card (320); transferring the request flow control

message from the input section of the source line card (310) to the output section of the

destination line card (320) using the switching fabric (300); generating a grant flow control

message at a destination line card (320) for the data packet; transferring the grant flow control

message from the output section of the destination line card (320) to the input section of the

destination line card (320); transferring the grant flow control message (324) from the input

section of the destination line card (320) to the output section of the source line card (310) using

the switching fabric (300); receiving the grant flow control message (324) on the output section

of the source line card (310) and transferring the grant (324) flow control message to the input

section of the source line card (310); and upon receipt of the grant flow control message at the

input section of the source line card (310), transferring the data packet from the source line card

(310) to the destination line card (320) using the switching fabric (300); regarding claim 38, In a

switching device having a plurality of line cards (210, 220) and switch fabric (200) therebetween

for transferring data packets, where each line card includes an input section including one or

more input ports and an output section including one or more output ports, a method for

controlling the transfer of a data packet through the switching device comprising: generating

flow control messages (314) at the source line card (310) and destination line card (320) to

authorize a transfer of the data packet from the source line card (310) to the destination line card

(320); and transferring the flow control messages between the source and destination line cards

including transferring flow control messages from the input section of a line card to the output

section of a different line card using the switching fabric (200); transferring flow control

messages from the output section of a line card to the input section of a same line card without

using the switching fabric; regarding claim 39, In a switching device having a plurality of line

cards and a switch fabric therebetween for transferring data packets, a method for controlling the

transfer of a data packet through the switching device comprising: generating flow control

messages at the source line card (310) and destination line card (320) to authorize a transfer of

the data packet from the source line card (310) to the destination line card (320), each flow

control message (314) only including a source and destination line card address; and transferring

the flow control messages between the source and destination line cards using the switching

fabric (300) whereby minimal data buffering (312) is required in the switch fabric to fairly

process the flow control messages. See column 1-7.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

7.   Claims 6, 23, 37, 28, 42, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Khacherian et al. (US 5,768,257) in view of Koning et al. (US 6,125,112).

        Khacherian et al. discloses a data switching system comprising the following features:

regarding claim 6, depicted in Figs. 2, 3, one or more source line cards (310); one or more

destination line cards (320); and a switching fabric (300) coupled to the source line card (310)

and the destination line card (320), the switching fabric (300) being configured to receive and

transmit the request (314), grant (324) and data cell to ones of the appropriate one or more source

line cards and the one or more destination line cards (210, 220); regarding claim 23, in a

switching device having a plurality of line cards (210, 220) and a switch fabric (200)

therebetween for transferring data packets; regarding claim 27, a method for transferring data

between line cards (210, 220) in a device that includes a plurality of line cards and a switching

fabric (200) coupled to the line cards, the method comprising: transmitting a request signal (314)

from a source line card (310) to a destination line card (320) through the switching fabric (300):

upon receiving the request signal at the destination line card (320), sending a grant signal (324)

from the destination line, card to the source line card (310) responsive to the request signal (314)

to authorize the source line card (310) to transfer data to the destination line card (320), and

transferring a data cell from the source line card (310) to the destination line card (320) in

response to the grant signal (324) received at the source line card (310); regarding claim 42, a

switching device for transferring data packets, comprising: one or more source line cards (210)

each including a request generator to generate a request signal (314) to be transmitted in order to

obtain an authorization to transmit data; one or more destination line cards (220) each including

a grant generator to generate and send back a grant signal (324) to a source line card in response

to the request signal received at the destination line card to authorize the source line card to

transmit a data cell to the destination line card; regarding claim 43, generating flow control

messages (314) for authorizing a transfer of a packet from source line card to a destination line

card. See column 1-7.

Khacherian et al. does not disclose the following features: regarding claim 6, the

switching fabric includes a plurality of planes, each plane being coupled to the source line card

and the destination line card to receive and switch the request signal, the grant signal and the data

cell to the appropriate line card; regarding claim 23, a switch fabric comprising: a plurality of

first stage crossbars in a first stage, each of the first stage crossbars having a plurality of input

ports and a plurality of output ports, each input port having a first request spray engine to receive

a request signal and spray the request signal to one of the output ports in the same first stage

crossbar; a plurality of second stage crossbars in a second stage, each of the second stage

crossbars having a plurality of input ports and a plurality of output ports, each input port having a

second request spray engine to receive the request signal from one of the first stage crossbars and

spray the request signal to one of the output ports in the same second stage crossbar, wherein the

output ports of the first stage crossbars are connected to the input ports of the second stage

crossbars; and a plurality of third stage crossbars in a third stage, each of the third stage crossbars

having a plurality of input ports and a plurality of output ports, each input port having a third

request spray engine to receive a request signal from one of the second stage crossbars and spray

the request signal to one of the output ports in the same third stage crossbar, wherein the output

ports of the second stage crossbars is are connected to the input ports of the third stage crossbars;

regarding claim 27, wherein the switching fabric includes a plurality of planes, the method

further comprising: transmitting the request signal to one of the planes; and sending the grant

signal from the destination line card to the source line card in response to each of the request

signals received at the destination line card from each of the planes; regarding claim 28; sending

the grant signal form the destination line card to the same plane from which the request signal

arrived; regarding claim 42, a plurality of switching planes coupling the source line cards and the

destination line cards, each switching plane being configured to receive and transmit the request,

grant and data cell to the appropriate line cards;; regarding claim 43, providing plural switching

planes between each source line card and destination line card; spraying the flow control

messages over each of the plural switching planes; spraying data packets over switching planes

on which flow control authorization messages are received.

Koning et al. discloses a multistage ATM switch comprising the following features:

depicted in Fig. 8, regarding claim 6, the switching fabric includes a plurality of planes (12, 22,

32), each plane (12, 22, 32) being coupled to the source line card (150) and the destination line

card (102) to receive and switch the request signal, the grant signal and the data cell to the

appropriate line card; regarding claim 23, a switch fabric comprising: a plurality of first stage

crossbars in a first stage (12), each of the first stage crossbars having a plurality of input ports

and a plurality of output ports, each input port having a first request spray engine to receive a

request signal and spray the request signal to one of the output ports in the same first stage

crossbar (12); a plurality of second stage crossbars in a second stage (42), each of the second

stage crossbars having a plurality of input ports and a plurality of output ports, each input port

having a second request spray engine to receive the request signal from one of the first stage

crossbars and spray the request signal to one of the output ports in the same second stage

crossbar, wherein the output ports of the first stage crossbars are connected to the input ports of

the second stage crossbars (42); and a plurality of third stage crossbars in a third stage (72), each

of the third stage crossbars having a plurality of input ports and a plurality of output ports, each

input port having a third request spray engine to receive a request signal from one of the second

stage crossbars and spray the request signal to one of the output ports in the same third stage

crossbar, wherein the output ports of the second stage crossbars is are connected to the input

ports of the third stage crossbars (72); regarding claim 27, wherein the switching fabric includes

a plurality of planes (12, 22, 32), the method further comprising: transmitting the request signal

to one of the planes (12); and sending the grant signal from the destination line card (102) to the

source line card (150) in response to each of the request signals received at the destination line

card (102) from each of the planes (12, 22, 32); regarding claim 28; sending the grant signal

form the destination line card (102) to the same plane from which the request signal arrived;

regarding claim 42, a plurality of switching planes (12, 22, 32) coupling the source line cards and

the destination line cards, each switching plane being configured to receive and transmit the

request, grant and data cell to the appropriate line cards (150, 102); regarding claim 43,

providing plural switching planes (12, 22, 32) between each source line card and destination line

card (150, 102); spraying the flow control messages over each of the plural switching planes;

spraying data packets over switching planes on which flow control authorization messages are

received. See column 3, line 58 to column 7, line 33. It would have been obvious to one of the

ordinary skill in the art at the time of the invention to modify the system of Khacherian et al. by

using the features, as taught by Koning et al., in order to provide maximum efficiency without

buffering. See column 2, lines 12-13.

Allowable Subject Matter

8.   Claims 3-5, 8-22, 24, 30-33, 35, 44 are allowed.
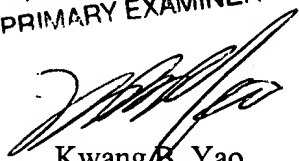
Conclusion

9.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kwang B. Yao whose telephone number is 703-308-7583. The

examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chi H Pham can be reached on 703-305-4378. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KWANG BIN YAO
PRIMARY EXAMINER

Kwang B. Yao
April 9, 2004